1.0 Background

This proposal, to require the incorporation of repair assessment guidelines into the maintenance programs for certain transport category airplanes, follows from commitments made by the FAA and the aviation community in June of 1988 to address the issues concerning the safety of aging transport airplanes.

A high-cycle transport airplane enroute from Hilo to Honolulu, Hawaii suffered major structural damage to it's pressurized fuselage during flight in April 1988. In June of 1988 the FAA sponsored a conference on aging airplanes. The apparent economic feasibility of operating certain older technology airplanes had resulted in the operation of airplanes beyond previously projected retirement age. Because of the problems revealed by the accident in Hawaii and the continued usage of older airplanes, it was generally agreed that increased attention needed to be focused on the aging fleet and on maintaining its continued operational safety.

The Air Transport Association of America (ATA) and the Aerospace Industries Association of America (AIA) committed themselves to identifying and implementing procedures to ensure the continuing structural airworthiness of aging transport category airplanes. An aging aircraft task force with representatives from the aircraft operators, OEMs, regulatory authorities, and other aviation representatives was established in August 1988. The task force, then known as the Airworthiness Assurance Task Force (AATF), set forth five major elements of a program for keeping the aging fleet safe: (1) select service bulletins, applicable to each airplane model in the aging transport fleet, and recommend mandatory incorporation of terminating modification, (2) develop corrosion-directed inspection and prevention programs, (3) develop generic structural maintenance program guidelines for aging airplanes, (4) review and update the Supplemental Structural Inspection Documents (SSID), and (5) assess repair damage tolerance. Structures Task Groups (STG) sponsored by the AATF were assigned the task of developing these elements into usable programs, Figure 1.1.

Today the AATF, now known as the Airworthiness Assurance Working Group (AAWG), has largely completed its work on the first four elements. The rulemaking contained herein would bring the fifth element, the assessment of repair damage tolerance, to fruition.

Figure 1.2 details the industry activities since 1988 on the subject of continued airworthiness of structural repairs. Major activities to develop the recommendations in this report included meetings at all levels of the industry including the Structures Task Group (STG), and the AAWG. Industry concerns for direction and priorities for assessment of existing repairs were expressed by the AAWG in April 1991. As a result, the AAWG drafted and published criteria for a con-

sistent examination of the repair issue in December 1991. At that time the AAWG formed a Repair Assessment Task Group (RATG) made up of operators, OEMs and regulators to focus the development of recommendations. Amongst other guidance from the AAWG was direction for an in depth review of in-service repairs as well as consistency of approach from the various OEMs.

In 1991, the AAWG was placed under the auspices of the Aviation Rulemaking Advisory Committee (ARAC) as part of the Transport Aircraft and Engine Issues Group (TAEIG). The issue of repair assessment was subsequently officially tasked to the AAWG by the FAA (see Appendix C of Attachment 2).

In April 1993, the Task Group formed by the AAWG presented their recommendations for review and approval (Attachment 2). The recommendations were accepted, with a minority position from the FAA, and forwarded to the TAEIG for acceptance and forwarding to the FAA. Due consideration of those recommendations revealed that consensus could not be reached and the report was returned to the AAWG for reconsideration.

The main consideration that prevented acceptance of the report by TAEIG was the AAWG position that no new regulations were required to insure compliance with the program. In September of 1993 the AAWG carefully reviewed the concerns of the TAEIG and then accepted the task of developing rule and guidance language subject to the following requirements:

- That the OEMs update SRMs to include damage tolerance rated structural repairs (ATA Chapters 51 through 57 plus others as appropriate).
- That the OEMs produce model specific program documents that will contain FAA approved data on means to evaluate existing repairs within an operator's fleet.
- That the OEMs provide training on the use of the model specific program data to both the operators and regulators.
- That operators would perform a one time evaluation of existing repairs by a predetermined model specific implementation time to establish the required supplemental maintenance programs (as necessary) for those repairs.
- That the initial effort be directed towards fuselage (Chapter 53) repairs with other repairs considered later.
- That the OEMs agree to have the necessary data for the program available and training started one year before the effective date of the notice of proposed rulemaking (NPRM).
- That the program not require special reporting requirements.
- That the program would be enforced through an FAR rule.

This position was accepted by the AAWG by an eleven to one vote. The minority position was expressed by an operator who stated that nothing has changed to reverse the earlier position; namely, that repairs on aircraft in question, have never been shown to be a safety concern and that rulemaking is premature until the voluntary commitment on the part of the operators and OEMs, has been shown to be ineffective (see Attachment 2, Conclusions and Recommendations). Based on the FAA position that rulemaking was absolutely required for this issue, the operator in question agreed that it would be best to assist in the development of the necessary language even though the operator believes it to be premature.

The following sections describe the AAWG tasking to develop recommendations for evaluation of existing repairs, the approach taken for repair evaluations, recommendations for development of Structural Repair Manual (SRM) updates and model specific repair assessment documents approved by the FAA. Sections 7 and 8 present the proposed rule language and advisory material for codification.

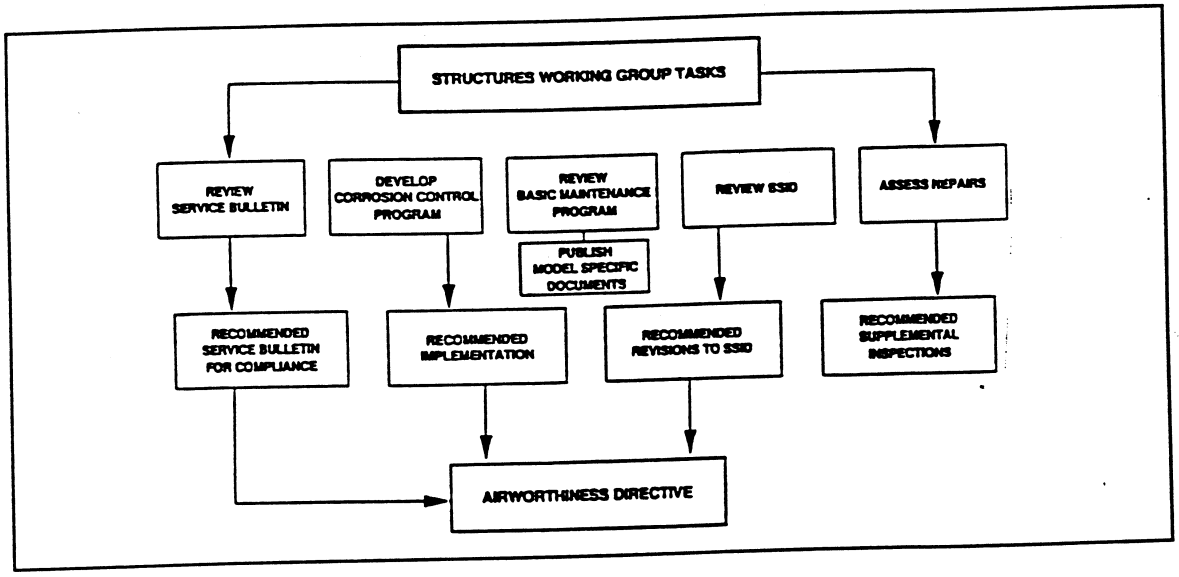

Figure 1.1 Industry Aging Fleet Program

DATE	ACTIVITY
JUN 1988	Repair Assessment Chartered By Airworthiness Assurance Task Force
FEB 1990- SEP 1991	Program Development (SWG, OEM, and AAWG Subcommittee Meetings) (11 Meetings held in this period)
DEC 1991	Industry Concerned With Program Direction
DEC 1991	Repair Assessment Task Group Chartered by AAWG
MAR 1992	Repair Survey of 30 Airplanes (Surveys conducted in California and Texas)
APR 1992	RATG Recommendations Developed; Seattle, WA.
APR 1992	RATG Recommendations presented to AAWG; Washington D. C.
MAY 1992	RATG Met to Discuss Repair Assessment Guidance Material and Means of Publication; Seattle WA.
MAY 1992	RATG Subcommittee on Repair Assessment Status; Long Beach CA.
JUN 1992	SRM and Guidance Material Reviewed During AAWG Meeting; Amsterdam
JUN 1992	Operator Caucus on Repair Assessment; Atlanta, GA.
SEP 1992	OEM Caucus on Repair Assessment; Seattle, WA.
OCT 1992	AAWG Progress Review of RATG Task; Washington D. C.
NOV 1992- FEB 1993	Key Repair Assessment Issues Resolved During Two RATG Meetings; Washington D. C.
MAR 1993	Repair Assessment Report Drafted and Approved
APR 1993	RATG Recommendations Presented to AAWG; Washington D. C.
APR 1993	AAWG/RATG Recommendations Presented to ARAC; Albuquerque, NM
AUG 1993	Minority Positions on Repair Assessment Presented to ARAC; Seattle WA
SEP 1993	AAWG Reaches Consensus For Repair Assessment Rule; Orlando FL
FEB 1994	Repair Assessment Rule Discussed at AAWG Meeting; Memphis TN
APR 1994	Repair Survey of In-service Airplanes by Operators/OEMs
JUN 1994	Repair Rule Writing Task Group (RRWTG) Formed by AAWG; Washington DC
AUG 1994	RRWTG Meeting with FAA Economists; Washington D. C.
SEP 1994	RRTWG Meeting to Review Rule/AC Content; Washington D. C.
NOV 1994	RRWTG Issue Draft Final Report Containing Rule and AC
MAR 1995	FAA Legal/PMI Review of Proposed Rule and AC; Albuquerque NM
JUN 1995	AEA/AECMA/AIA/JAA Meeting; Hoofddorp NL
OCT 1996	FAA Finishes Preliminary Legal / Economic Review of Rule and AC
DEC 1996	AAWG Issues Final Report to TAEIG (ARAC)

Figure 1.2 Industry Activities for Repair Assessment